SUPPORT FOR THE AMENDMENT

Claims 1-35, 37-42, and 47-50 were previously canceled.

Claims 43-45 have been canceled.

Claim 36 has been amended.

The amendment of Claim 36 is supported by the originally filed claims and the specification at page 5, lines 5-8, page 7, line 26 to page 12, line 20, as well as the Examples.

No new matter is believed to have been introduced by the present amendment.

REMARKS

Claims 36, 46, and 51-61 are pending in the present application.

The rejections of: (a) Claims 43-45 under 35 U.S.C. §112, second paragraph, (b) Claims 43-45 under 35 U.S.C. § 112, first paragraph ("written description"), and (c) Claims 43-45 under 35 U.S.C. § 112, first paragraph ("enablement"), are obviated by cancellation of Claims 43-45. With the cancellation of Claims 43-45, these grounds of rejection are moot. Withdrawal of these grounds of rejection is requested.

The rejection of Claims 36, 46, and 51-61 under 35 U.S.C. § 112, first paragraph ("enablement"), are respectfully traversed.

At the outset, Applicants note that in the second paragraph of page 6, the Examiner indicates that this rejection is maintained based on the interpretation of the scope of the claims to be related to "sequences that are 70%, 80%, or 90% identical to SEQ ID NO: 1 an do not encode a polypeptide that is at least 95% identical to the amino acid sequence of SEQ ID NO: 2." This criticism is obviated by the cancellation of Claims 43-45.

On page 9, paragraph 4, the Examiner alleges that the Board's opinion in *Ex parte Bandman* is non-precedential. Be that as it may, Applicants citation of *Ex parte Bandman* was to show that the claimed invention and the context of the present invention is consistent with that reviewed and held enabled by the Board in *Ex parte Bandman*. Applicants submit that this consistency should be regarded for the value that it adds, which is that the Board has held that claims to amino acid sequences that are at least 95% identical to the disclosed sequence are adequately described and enabled when the specification describes the

nucleotide and amino acid sequences. This is precisely the case in the present application where the polynucleotide sequence encoding SEQ ID NO: 2 is set forth in SEQ ID NO: 1. However, the decision in *Ex parte Bandman* need not by dispositive in the present case for the reasons give below.

Further, the Examiner indicated that the "Guidelines state "There is actual reduction to practice of the single disclosed species"". This is precisely correct, but the single disclosed species is and can be the polypeptide itself. The Examiner explains this position incorrectly offering that "The Office contends Applicants have not disclosed an actual reduction to practice of any nucleic acid molecule. Applicants are invited to submit a 1.132 declaration." Applicants disagree with this assertion and submit that the claimed invention is fully enabled for the following reasons.

At page 13, line 1 to page 16, line 30, Applicants provide a detailed explanation of how the skilled artisan may clone, express, and characterize the polynucleotides and/or polypeptides that fall within the scope of the present invention. Moreover, Applicants provide a detailed example on page 16, lines 31 to page 18, line 3 of how to assess the up-regulation of expression due to salt stress.

MPEP § 2164.01 states:

> The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation.

Applicants submit that determining what sequences fall within or without the scope of the present claims would be readily apparent to the skilled artisan with the present application in hand. As stated above, at page 13, line 1 to page 18, line 3, Applicants provide a detailed

example of how the skilled artisan may clone, express, and characterize any sequence variant to assess its standing with respect to the claimed invention.

In the Office Action, the Examiner has provided a rather nice account of some of the difficulties associated with predicting activity from sequence and structure. However, this discourse further underscores the fact that the activity now recited in these claims provides sufficient direction with respect to the scope of these claims, as well as the importance of the disclosure of the present invention to provide the skilled artisan with express guidance to assess Na+/H+ transporter activity.

In fact, MPEP §2164.06 states:

> ... quantity of experimentation needed to be performed by one skilled in the art is only one factor involved in determining whether "undue experimentation" is required to make and use the invention. "[A]n extended period of experimentation may not be undue if the skilled artisan is given sufficient direction or guidance." In re Colianni, 561 F.2d 220, 224, 195 USPQ 150, 153 (CCPA 1977). " 'The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed.

Applicants submit that, with the present specification in hand, determination of polynucleotide sequences that fall within the scope of the present invention would require nothing more than routine experimentation to determine sequence homology and protein activity. Again, the Examiner is referred to the attached sequence alignments and the discussion pertaining to the same set forth above, which clearly shows that that the skilled artisan would be able to readily assess and identify polynucleotides and polypeptides within the scope of the present invention. As such, Applicants submit that the claims of the present application are fully enabled within the context of 35 U.S.C. §112, first paragraph.

Moreover, the Examiner is reminded that the MPEP further states in §2164.02:

> The specification need not contain an example if the invention is otherwise disclosed in such manner that one skilled in the art will be able to practice it without an undue amount of experimentation.

Therefore, the failure to state each any every possible method by which the proteins' activities are increased, in and of itself, is not sufficient to support an enablement rejection, nor is the omission of a working example.

Also in the Office Action at the bottom of page 6, the Examiner makes a proclamation that "Applicants have not reduced to practice their invention." Applicants submit that the Examiner's proclamation is without any merit. In fact, the mere "filing of a patent application serves as conception and constructive reduction to practice of the subject matter described in the application" (MPEP § 2138.05). Moreover, MPEP §2138.05 states: "the inventor need not provide evidence of either conception or actual reduction to practice when relying on the content of the patent application."

Nonetheless, further support for the enablement of the present invention and to evidence actual reduction to practice, Applicants direct the Examiner's attention to Shi et al (Nature Biotechnology, 2002), submitted with the response filed on January 3, 2007. Applicants submit that the results presented in Shi et al are in accordance with the methods set forth in the present application and provide a "proof of principal" and actual reduction to practice of the functionality of the claimed invention using SOS1 obtained from *Arabidopsis thalania*. Moreover, Applicants also submitted with the response filed on January 3, 2007 Martinez-Atienza et al, Plant Physiol., *Conservation of the SOS Salt Tolerance Pathway in Rice*, 2006 Dec 8; [Epub ahead of print], which clearly shows that the present invention works using SOS1 sequences from rice, which are has 60% identity over the full-length

sequence (see sequence alignment submitted with the response filed on January 3, 2007). Clearly, the present specification, Shi et al and Martinez-Atienza et al demonstrate the enablement of the full scope of the claimed invention.

Based on the foregoing, Applicants submit that the present claims are fully enabled by the specification and the common knowledge available in the art and as such withdrawal of this ground of rejection is requested.

Finally, Applicants traverse the obviousness-type double patenting rejection of Claims 36 and 43-61 over Claims 8-11, 19-22, 29-33, 41-44, 52-55, and 63-66 of US 6,727,408.

The Examiner is reminded of the third sentence of 35 U.S.C. §121, which "prohibits the use of a patent issuing on an application with respect to which a requirement for restriction has been made, or on an application filed as a result of such a requirement, as a reference against any divisional application, if the divisional application is filed before the issuance of the patent." (see MPEP §804.01). Indeed, the third sentence of 35 U.S.C. §121, specifically states:

> A patent issuing on an application with respect to which a requirement for restriction under this section has been made, or on an application filed as a result of such a requirement, shall not be used as a reference either in the Patent and Trademark Office or in the courts against a divisional application or against the original application or any patent issued on either of them, if the divisional application is filed before the issuance of the patent on the other application.

The present application was filed during the pendency of the application underlying U.S. 6,727,408 as a divisional application of that application. During the prosecution of U.S. 6,727,408, the Examiner issued a Restriction Requirement on July 30, 2002, presenting the following groupings for election.

Group I: Claims 1-22 and 32-33, drawn to an isolated polynucleotide which encodes a protein of SEQ ID NO:2, a vector, a host cell, a cell, a plant cell, and a transgenic plant;

Group II: Claims 23-25, drawn to a process for screening for polynucleotides;

Group III: Claims 26-29, drawn to a method for detecting or producing a nucleic acid;

Group IV: Claims 30-31, drawn to a method of making SOS1 protein;

Group V: Claims 34-35, drawn to a method of making a transgenic plant and a method of increasing salt tolerance of a plant by introducing to the plant a polynucleotide which encodes a protein of SEQ ID NO:2;

Group VI: Claim 36, drawn to a method of increasing the salt tolerance of a plant by enhancing the expression of the SOS1 gene; and

Group VII: Claims 37-42, drawn to an isolated polypeptide.

In response, Applicants elected Group I on September 30, 2002. Subsequently, on January 2, 2004, Applicants filed the present application as a divisional application of the application underlying U.S. 6,727,408 in which the claims corresponding to Group V (above) were ultimately pursued. Thus, the third sentence of 35 U.S.C. §121 is applicable to the present application and precludes a finding of double patenting.

Further, it should be noted that at the time of filing, the original claims were preserved as originally filed and the Office issued a Restriction Requirement on January 30, 2006,

Group I: Claims 1-22, and 32-35, drawn to an isolated polynucleotide which encodes a protein comprising the amino acid sequence of SEQ ID NO:2 or variants thereof, vector, host cell, plant cell, transgenic cell, and method of making a transgenic plant comprising said polynucleotide;

Group II: Claims 23-26 and 28-29, drawn to a process for screening for polynucleotides which encode a protein having Na/H transporter

activity comprising hybridization technology or comprising PCR technology;

Group III: Claim 27, drawn to a method for producing a nucleic acid using a primer;

Group IV: Claims 30-31, drawn to a method of making a protein;

Group V: Claim 36, drawn to a method of increasing the salt tolerance of a plant comprising enhancing the expressing of the SOS1 gene in a plant; and

Group VI: Claims 37-42, drawn to an isolated polypeptide.

Notably, the Restriction Requirement issued in the present application is virtually identical to that issued in the application underlying US 6,727,408. Further, on June 1, 2006, Applicants elected Group V. Accordingly, in addition to the application of the third sentence of 35 U.S.C. §121 to the present application to preclude a finding of double patenting, Applicants submit that the Examiner in this case has affirmed the patentable distinctness between the subject matter of the presently claimed invention and that claimed in US 727,408.

In summary, this ground of rejection is improper and should be withdrawn. Acknowledgment to this effect is requested.

Applicants submit that the application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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